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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,592	11/17/1999	KEITH E. LEJEUNE	99-041	4572

7590 02/11/2003

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EXAMINER

NAFF, DAVID M

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 02/11/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/441,592

Applicant(s)

Leanne J. J. J.

Examiner

Haff

Group Art Unit

1657

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 11/18/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1 + 3 - 10 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1 + 5 - 10 is/are rejected.
- ☒ Claim(s) 3 + 4 is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/18/02 has been entered.

The response of 11/18/02 presented arguments and a Declaration by Keith E. Lejeune, and stated that claims 2 and 11-30 have been canceled.

Claims 2 and 11-30 have been canceled, and claims examined on the merits are 1 and 3-10 which are all claims in the application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

Claims 1 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Havens et al for the type of reasons set forth in the previous office actions of 7/16/02 and 10/7/02.

The claims are drawn to a method of increasing loading of active enzyme immobilized in a polyurethane polymer by synthesizing the polymer in a reaction mixture containing water and enzyme to provide an enzyme loading of the polymer of greater than approximately 0.1 percent by weight of the polymer, and including a sufficient amount of surfactant in the reaction mixture to increase enzyme activity at the enzyme loading.

Havens et al disclose immobilizing an enzyme in a polyurethane polymer by synthesizing the polymer in a reaction mixture containing the

enzyme and a surfactant. Loading of enzyme of at least 0.1 wt% would have been inherent in method of Havens et al since the polymer may contain 5 mg of protein per gram of prepolymer resin (page 2256, right col, line 17 from the bottom) which is 0.5 wt of protein%, and the crude
5 enzyme extract is partially purified by ammonium sulfate precipitation (page 2256, left col, first complete paragraph). The surfactant used by Havens et al would have inherently provided increased enzyme activity at the enzyme loading.

Response to Arguments

10 Applicant's arguments and declaration filed 11/18/02 have been fully considered but they are not persuasive.

Applicants urge that the 0.5 wt% protein in the polymer of Havens et al contains a much lower concentration of enzyme, and based on mathematical calculations presented in the declaration, assert that
15 enzyme loading of the Havens et al polymer is only .0058 wt%.

The mathematical calculations are unpersuasive since they are based on the polymer of Havens et al containing 2.9 mg protein per g prepolymer whereas Havens et al disclose that 5 mg protein per g prepolymer may be present. Furthermore, the calculations are based on the rate of
20 reduction in parathion concentration in Figure 1 of Havens et al. However, the rate of reduction in parathion content could have been affected by factors other than only the amount of active enzyme present in the polymer such as the ability of the parathion substrate to contact all active enzyme in the polymer. The polymer could have partially
25 blocked access of the substrate to the entrapped enzyme. Therefore,

there could have been substantially more active enzyme in the polymer than appears from the rate of substrate reduction. Furthermore, in addition to the active enzyme, there could have been a substantial amount of inactive enzyme in the polymer. The present claims do not require a
5 certain amount of the loaded enzyme to be active enzyme. The present claims and specification do not require conditions different than used by Havens et al that would have resulted in greater enzyme loading than obtained by Havens et al.

Claims 3 and 4 are allowable, but are objected to as being dependent
10 on a rejected claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is (703) 308-0520. The examiner can normally be reached on Monday-Thursday and every other Friday from about 8:30 AM to about 6:00
15 PM.

If attempts to reach the examiner by telephone are unsuccessful, a message can be left on voice mail.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn, can be reached at telephone number
20 (703) 308-4743.

The fax phone number is (703) 872-9306 before final rejection or (703) 872-9307 after final rejection.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

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DMN
2/7/03



DAVID M. NAFF
PRIMARY EXAMINER
ART UNIT 1651